Case Report

pISSN, eISSN 0125-5614
M Dent J 2021; 41 (2) : 151-156

Gingival squamous cell carcinoma of the anterior mandible clinically presenting as a reactive gingival growth: a case report.

Mohamad Adib Jaafar[1,5], Ling Siew Wong[2], Aisah Ahmad[3], Fairuz Abdul Rahman[4]

[1] *Periodontal Specialist Unit of Sibu Jaya, Sibu Jaya Dental Clinic, Ministry of Health Malaysia*
[2] *Oral and Maxillofacial Department, Sibu Hospital, Ministry of Health Malaysia*
[3] *Periodontal Specialist Unit of Jalan Masjid, Polyclinic Jalan Masjid, Ministry of Health Malaysia*
[4] *Department of Oral Pathology and Medicine, Queen Elizabeth Hospital, Ministry of Health Malaysia*
[5] *Periodontal Specialist Clinic of Mak Mandin, Polyclinic of Mak Mandin, Ministry of Health Malaysia*

Objectives: The incidence of oral malignancy presenting in the gingiva is very low. Gingival squamous cell carcinoma can appear similar to a variety of gingival lesions ranging from benign reactive inflammatory lesions to less common malignancies. Misdiagnosis often leads to delayed management of the disease that affects the patient's prognosis and survival rate. This case report describes a case of gingival squamous cell carcinoma of the mandibular incisors presenting clinically as reactive pyogenic granuloma.

Methods: A 46-year-old female was referred to the Periodontal Specialist Clinic in 2019 with a complaint of recurrent gum swelling in the lower front teeth region, which she claimed occurred after a small piece of apple got stuck between her teeth. The swelling was painless, however, she felt discomfort. Based on the clinically benign-looking lesion, a differential diagnosis of pyogenic granuloma, fibrous epulis, and other benign reactive/inflammatory lesions was made. An excisional biopsy was performed under local anaesthesia.

Results: The histological examination revealed severely dysplastic stratified squamous epithelium invading into the underlying connective tissue. The final diagnosis is a well-differentiated squamous cell carcinoma of the gingiva ($T_1N_0M_0$).

Conclusions: The important role of dental practitioners in the early detection of gingival malignancy, especially for those practising in periodontal specialist settings, can significantly improve patient survival. This case report demonstrates the need to biopsy all suspicious gingival lesions for histopathological examination.

Key words: gingival, oral squamous cell carcinoma, periodontitis, pyogenic granuloma

How to cite: Jaafar MA, Wong LS, Ahmad A, Rahman FA. Gingival squamous cell carcinoma of the anterior mandible clinically presenting as a reactive gingival growth: a case report. M Dent J 2021; 41: 151-156.

Introduction

Oral cancer is the sixth most common malignancy worldwide with a high prevalence in the developing countries of South Asia and South-East Asia [1]. Of these cases, more than 90% are oral squamous cell carcinomas (OSCC) and are associated with risk factors, such as betel-quid chewing, tobacco use, smoking, and alcohol consumption [2]. OSCC has a varied clinical presentation and can affect any mucosal site in the oral cavity. More than 50% of OSCC cases affect the tongue and the floor of the mouth [1]. OSCC of the gingiva (gingival squamous cell carcinoma; GSCC) is less common, and according to some reports, represents less than 10% of cases [3, 4]. GSCC is less associated with the established OSCC risk factors, such as smoking and alcohol consumption, and its aetiology is unclear [5]. Clinically, GSCC can resemble a periodontal disease or a pyogenic granuloma

Correspondence author: Mohamad Adib Jaafar
Periodontal Specialist, Clinic of Mak Mandin, Polyclinic of Mak Mandin, Ministry of Health Malaysia, Butterworth, Penang. 13400, Malaysia
Tel. +60 4331 6243 E-mail: madibjaafar@gmail.com
Received: 4 February 2021 Revised: 19 May 2021 Accepted: 20 May 2021

[6-8], which makes it difficult to detect at an early stage and delays the appropriate treatment. The lesion can present with a granular or verrucous-papillary surface with or without ulceration [7, 9]. GSCC that erodes the underlying bone can lead to tooth mobility [6]. Because the clinical appearance resembles a periodontal lesion, GSCC can be misdiagnosed. A lack of apparent risk factors coupled with the rarity of this type of oral cancer may contribute to a delay in treatment and compromise the patient's prognosis and survival.

The purpose of this case study was to report a rare case of GSCC of the anterior lower gingiva and its clinicopathological features. This report also demonstrates the importance of histological examination in formulating the definitive diagnosis.

Case report

A 46-year-old female was referred to the periodontal specialist clinic with a complaint of recurrent gum swelling over the last three months in the lower front teeth region. According to the patient, the swelling appeared after a piece of apple became stuck between the lower incisors. She noticed that the swelling was increasing in size and it has caused occasional gingival bleeding, especially during tooth brushing. She went to a private dental clinic and had the lesion removed. However, the lesion had regrown and continued to grow at the same site. Although the swelling was painless, the patient felt discomfort, especially during eating. She also noticed a space between her teeth. Medically, she was diagnosed with hypothyroidism and was placed on Levothyroxine (Tirosint) and otherwise in good health. She was a non-smoker and non-drinker.

On her first visit, no obvious extraoral swelling or cervical lymphadenopathy was observed. Intraorally, an irregular sessile erythematous growth was noted at the attached gingiva at the lower mandibular incisors (teeth 32, 31, and 41). The swelling measured ~15 x 15 mm. The lesion was well demarcated from the surrounding normal mucosa (Figure 1). The lesion had grown coronally and covered half of the crowns of the adjacent teeth. The lesion extended into the interdental area. There were no noticeable mucosal changes noted in the lingual area. On palpation, the lesion was firm with a rough irregular surface texture. There was no tenderness upon palpation. Apart from easy bleeding, the periodontal examination found no evidence of a deep periodontal pocket of more than 5 mm interdentally and no exudate. No contact-point was noted between teeth 31 and 32. The teeth were firm, non-mobile and there was no tenderness on vertical or lateral percussion. The pulp sensibility test (electric pulp test) indicated that the teeth were vital and responsive. Periapical radiographic examination demonstrated evidence of minimal horizontal bone loss (Figure 2).

Based on the clinical and radiological findings, a provisional clinical diagnosis of reactive pyogenic granuloma was made. A differential diagnosis of fibrous epulis, reactive gingival overgrowth (chronic irritation or drug-related), verruciform xanthoma, granulomatosis gingivitis, and less commonly occurring lesions, such as peripheral giant cell granuloma and peripheral fibroma were also considered. An excisional biopsy of the lesion from the interdental papilla of teeth 32, 31, and 41 extending to the labial mucosa was performed under local anaesthesia. During the surgery, bone resorption of the labial plate, exposing the labial root surfaces of the teeth, was observed (Figure 3). Root debridement was performed using an ultrasonic scaler to remove residual subgingival calculus. Suturing was performed using 5/0 Nylon. Three weeks post-excisional biopsy, the lesion had recurred with a new small bright-reddish growth at the interdental papilla of teeth 31 and 32 (Figure 4). The patient had no complaint of pain or discomfort.

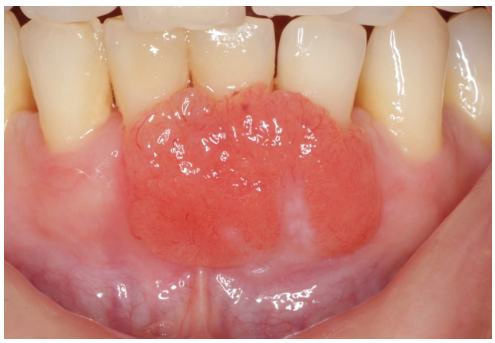

Figure 1 Reddish sessile swelling at the labial gingiva-mucosa adjacent to teeth 32, 31, and 41

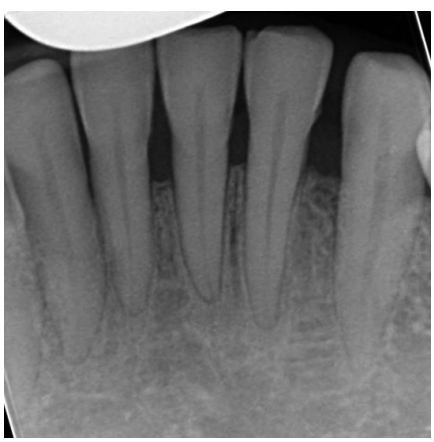

Figure 2 Periapical radiograph showing minimal horizontal bone loss.

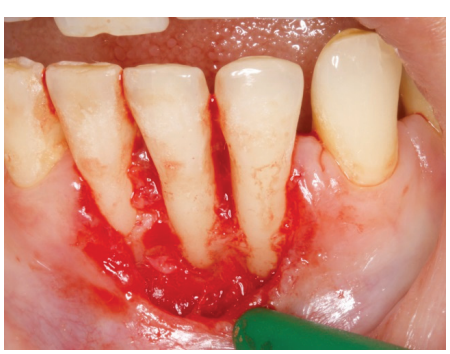

Figure 3 Excisional biopsy. Loss of alveolar bone is observed exposing the anterior root surface of adjacent teeth after removing the overlying lesion.

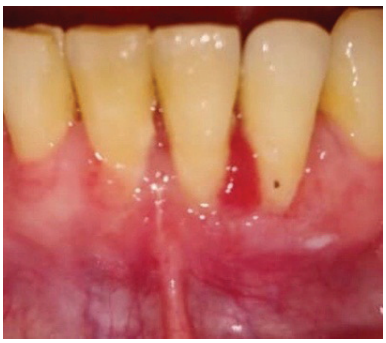

Figure 4 Three weeks post-excisional biopsy: A small lesion re-growth between teeth 31 and 32.

The histological examination of the excised tissue revealed severely dysplastic stratified squamous epithelium with conspicuous evidence of invasion into the underlying connective tissue. The tumour displayed moderate cellular and nuclear pleomorphism, nuclear hyperchromatism, acantholysis and dyskeratosis. Increased mitosis with some abnormal mitotic figures was observed. The underlying connective tissue was minimal and mainly composed of loose fibro-myxomatous tissue with a moderate host response (Figures 5–7). The final diagnosis of a well-differentiated SCC of the gingiva with the clinical staging ($T_1N_0M_0$) was made.

The patient was immediately referred to the Oral Maxillofacial and Surgery (OMFS) department for further investigation and staging of the tumour prior to OSCC management. A computerized tomography (CT) scan was performed to examine the extent of the tumour. The patient underwent wide excision of the tumour and hemimandibulectomy with fibula reconstruction along with selective neck dissection. The surgery was uneventful.The histopathological examination of the surgical specimen revealed complete removal of the tumour with clear margins and there was no lymph node involvement. The patient is currently stable and under regular follow-up monitoring every two months. The latest follow-up (eight months after surgery) with repeated CT scan found no evidence of recurrence.

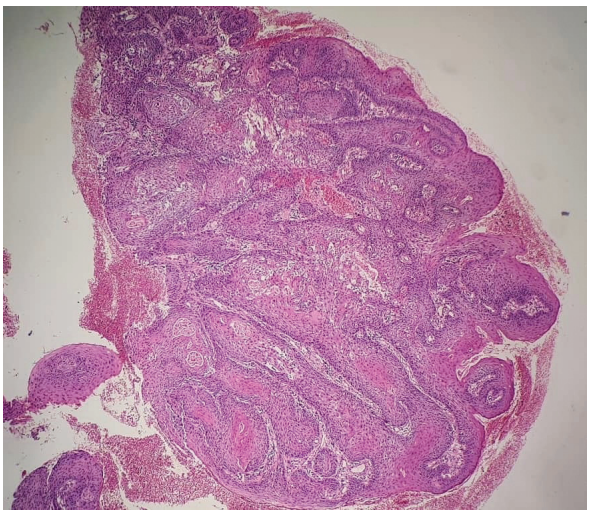

Figure 5 Photomicrograph shows a well-differentiated SCC arranged in anastomosing columns and islands of malignant epithelial cells invading into the underlying connective tissue. (Original magnification: 4x; H&E stain).

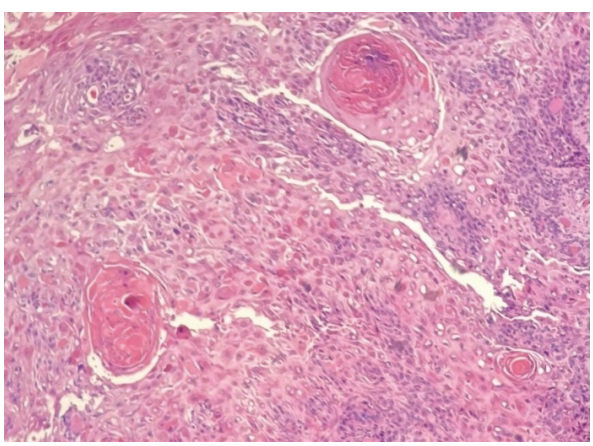

Figure 6 Photomicrograph shows sheets of malignant epithelial cells exhibiting prominent dyskeratosis with individual keratinizing cells and keratin whorl formation. (Original magnification: 10x; H&E stain).

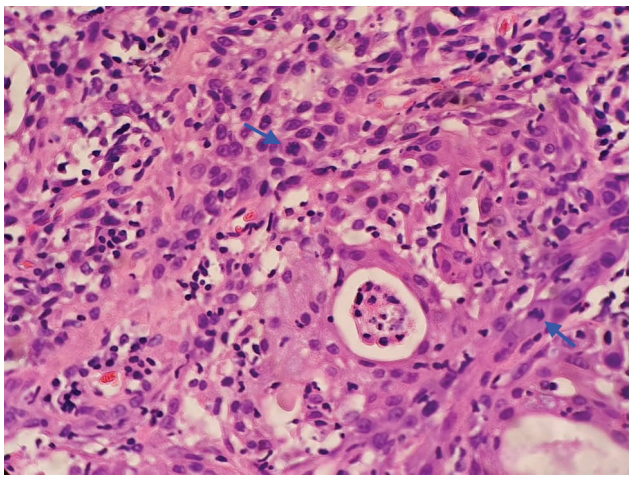

Figure 7 Photomicrograph shows that the tumour exhibits moderate cellular and nuclear pleomorphism. Occasional abnormal mitoses were also observed (blue arrows). (Original magnification: 40x; H&E stain).

Discussion

OSCC in the gingiva is rarely seen relative to other sites within the oral cavity [1, 3, 4] and it is more common in the mandibular gingiva than in the maxillary gingiva [9, 10]. GSCC typically presents as an insidious disease, but does not have the clinical characteristic appearance of a malignancy. It is therefore easily misdiagnosed as an inflammatory lesion of the periodontium, which commonly occurs in this area; these typically-occurring lesions include pyogenic granuloma and fibrous epulis, which are usually associated with the presence of calculus, irritation, or trauma. Other differential diagnoses, such as verruxiform xanthoma, granulomatosis gingivitis, peripheral giant cell granuloma, and peripheral ossifying fibroma should also be ruled out. In the present case, the patient had a recurrent erythematous swelling on the buccal aspect of the mandibular incisors, which she claimed happened after a small piece of apple got stuck between her

teeth. Therefore, the initial diagnosis was a reactive pyogenic granuloma, however, the histological examination revealed a different diagnosis.

Studies have shown that a well-accepted risk factor for OSCC is tobacco use and alcohol consumption. Relative to different geographic populations, betel-quid chewing with or without tobacco, causes an increased risk for oral cancer [1]. These three important factors can act independently or synergistically. However, the patient in this case reported no history of tobacco chewing or alcohol consumption, which further increased the difficulty in diagnosing GSCC. A study found that ~13% of OSCC cases have no history of smoking or alcohol drinking [11]. The disease is predominantly found in women. Other risk factors might therefore need to be evaluated. For example, the Human Papilloma Virus risk factor for OSCC is found mostly in non-smoking/non-drinking patients [12].

The survival of a patient with GSCC is greatly influenced by the stage of the disease (TNM) [13]. The most important prognostic factor is cervical lymph node metastasis. Studies have shown that the size and thickness of the tumour is significantly associated with the risk of cervical lymph node metastasis. The prevalence was found to be 51.5% for T1/T2 and 58.8% for patients in the T3/T4 category, with relation to the depth of invasion or thickness [14, 15]. However, with GSCC, where the gingiva is relatively thin, the risk of metastases and nodal involvement at an early stage is higher due to its proximity to the underlying periosteum and bone [8, 9]. In this case, mild bone resorption was present on the radiograph and during the biopsy procedure; however, no evidence of tumour infiltration into bone was seen histologically from the surgical specimen. Although another prognostic factor is histological grading [16], it has been found to have poor prognostic value in terms of the clinical outcome [17, 18]. Improved survival is also influenced by other factors, such as age, $T_1N_0M_0$ stage, and surgical treatment [9]. In this case, the prognosis was considered to be favourable because the patient was diagnosed with a $T_1N_0M_0$ stage. She also received surgical treatment, which can significantly improve survival.

Conclusion

GSCC is a rare, yet aggressive, type of OSCC. Because of its rarity and its similarity to other typical gingival lesions, it is difficult to diagnose. Most patients are not aware of the presence of the disease and seek treatment only when the disease has progressed to a more advanced stage [8]. This case report emphasizes the importance of biopsying all suspicious gingival lesions for histopathological examination. This case also emphasizes the important role of dentists in the early detection of gingival malignancies, especially those practising in periodontal specialist settings. In the current case, an early referral resulted in a good prognosis for this patient.

Acknowledgements

The authors thank the Director General of Health Malaysia for giving us the permission and support to publish this paper.

Disclosure

All authors declare no conflict of interest.

Human rights statement

All procedures were performed in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1964 and later versions. Informed consent was obtained from the patient for being included in the study.

Ethical approval

The study was exempted from the Medical Research and Ethics Committee (MREC), Ministry of Health Malaysia review. NMRR-20-2766-55585 (IIR).

Funding: None

References

1. Warnakulasuriya S. Global epidemiology of oral and oropharyngeal cancer. *Oral Oncol* 2009; 45: 309-16.
2. Feller L, Lemmer J. Oral squamous cell carcinoma: Epidemiology, clinical presentation and treatment. *J Cancer Ther* 2012; 3: 263-68.
3. Levi PA, Jr., Kim DM, Harsfield SL, Jacobson ER. Squamous cell carcinoma presenting as an endodontic-periodontic lesion. *J Periodontol* 2005; 76: 1798-804.
4. Albandar JM, Susin C, Hughes FJ. Manifestations of systemic diseases and conditions that affect the periodontal attachment apparatus: Case definitions and diagnostic considerations. *J Clin Periodontol* 2018; 45: S171-S89.
5. Neville BW, Damm DD, Allen CM, Chi AC. Oral & maxillofacial pathology 4th edition. Missouri: WB Saunders, Elsevier, 2016; p.374-389.
6. Gupta R, Debnath N, Nayak PA, Khandelwal V. Gingival squamous cell carcinoma presenting as periodontal lesion in the mandibular posterior region. *BMJ Case Rep* 2014; 2014: 1-4.
7. Lee JJ, Cheng SJ, Lin SK, Chiang CP, Yu CH, Kok SH. Gingival squamous cell carcinoma mimicking a dentoalveolar abscess: Report of a case. *J Endod* 2007; 33: 177-80.
8. Seoane J, Varela-Centelles PI, Walsh TF, Lopez-Cedrun JL, Vazquez I. Gingival squamous cell carcinoma: Diagnostic delay or rapid invasion? *J Periodontol* 2006; 77: 1229-33.
9. Lee KC, Chuang SK, Philipone EM, Peters SM. Which clinicopathologic factors affect the prognosis of gingival squamous cell carcinoma: A population analysis of 4,345 cases. *J Oral Maxillofac Surg* 2019; 77: 986-93.
10. Effiom OA, Adeyemo WL, Omitola OG, Ajayi OF, Emmanuel MM, Gbotolorun OM. Oral squamous cell carcinoma: A clinicopathologic review of 233 cases in lagos, nigeria. *J Oral Maxillofac Surg* 2008; 66: 1595-99.
11. Dahlstrom KR, Little JA, Zafereo ME, Lung M, Wei Q, Sturgis EM. Squamous cell carcinoma of the head and neck in never smoker-never drinkers: A descriptive epidemiologic study. *Head Neck* 2008; 30: 75-84.
12. Termine N, Panzarella V, Falaschini S, Russo A, Matranga D, Lo Muzio L, *et al*. Hpv in oral squamous cell carcinoma vs head and neck squamous cell carcinoma biopsies: A meta-analysis (1988-2007). *Ann Oncol* 2008; 19: 1681-90.
13. Amin M, Edge S, Greene F, et al., editors. AJCC cancer staging manual 8th edition. New York: Springer, 2017; p.113-21.
14. Woolgar JA. Histopathological prognosticators in oral and oropharyngeal squamous cell carcinoma. *Oral Oncol* 2006; 42: 229-39.
15. Haksever M, Inancli HM, Tuncel U, Kurkcuoglu SS, Uyar M, Genc O, *et al*. The effects of tumor size, degree of differentiation, and depth of invasion on the risk of neck node metastasis in squamous cell carcinoma of the oral cavity. *Ear Nose Throat J* 2012; 91: 130-35.
16. Omar EA. The outline of prognosis and new advances in diagnosis of oral squamous cell carcinoma (oscc): Review of the literature. *J Oral Oncol* 2013; 2013: 1-13.
17. Brandwein-Gensler M, Teixeira MS, Lewis CM, Lee B, Rolnitzky L, Hille JJ, *et al*. Oral squamous cell carcinoma: Histologic risk assessment, but not margin status, is strongly predictive of local disease-free and overall survival. *Am J Surg Pathol* 2005; 29: 167-78.
18. Dik EA, Ipenburg NA, Kessler PA, van Es RJJ, Willems SM. The value of histological grading of biopsy and resection specimens in early stage oral squamous cell carcinomas. *J Craniomaxillofac Surg* 2018; 46: 1001-06.